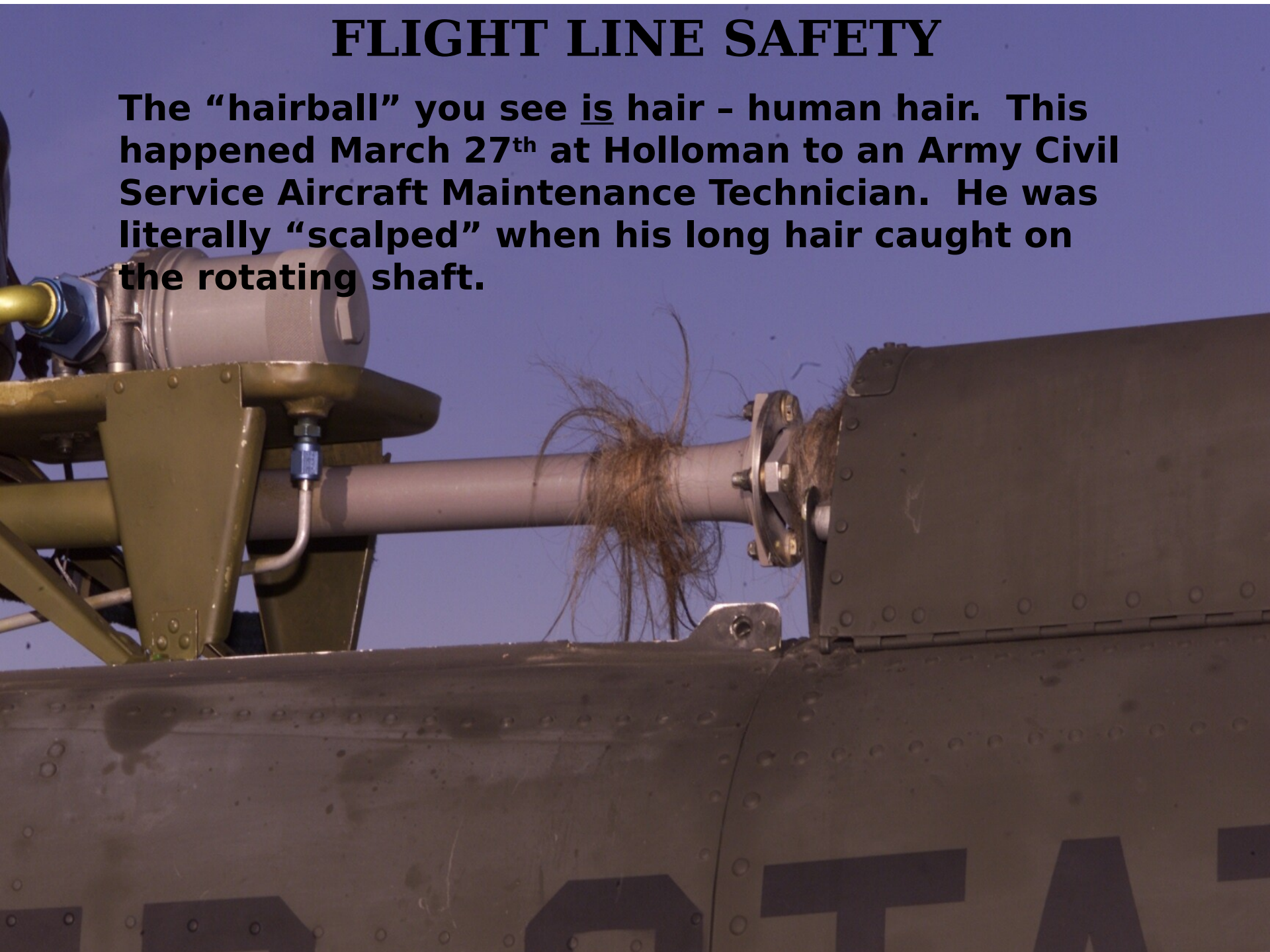
FLIGHT LINE SAFETY



The “hairball” you see is hair – human hair. This happened March 27th at Holloman to an Army Civil Service Aircraft Maintenance Technician. He was literally “scalped” when his long hair caught on the rotating shaft.

Headquarters U.S. Air Force

Integrity - Service - Excellence

Prevention Tools

LtCol Tom Luna

HQ Air Force Safety Center

DSN 246-0830

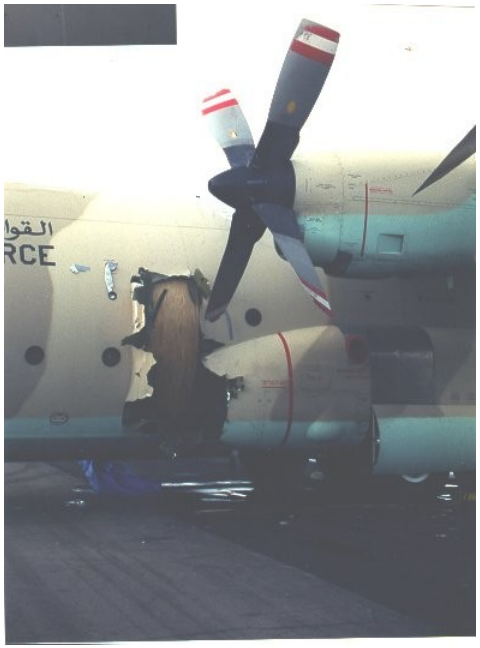
Thomas.Luna@kafb.saia.af.mil

U.S. AIR FORCE

U.S. AIR FORCE

OVERVIEW

- Operational Risk Management (ORM)
- Organizational Safety Assessments (OSAs)
- Human Factors Councils (HFC)
- Creating a Safety Culture
- Open Discussion



"First reckon, then risk"

Field Marshall Helmuth Von Moltke

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What is Operational Risk Management?

- Systematic decision-making tool
- All dimensions of risk considered

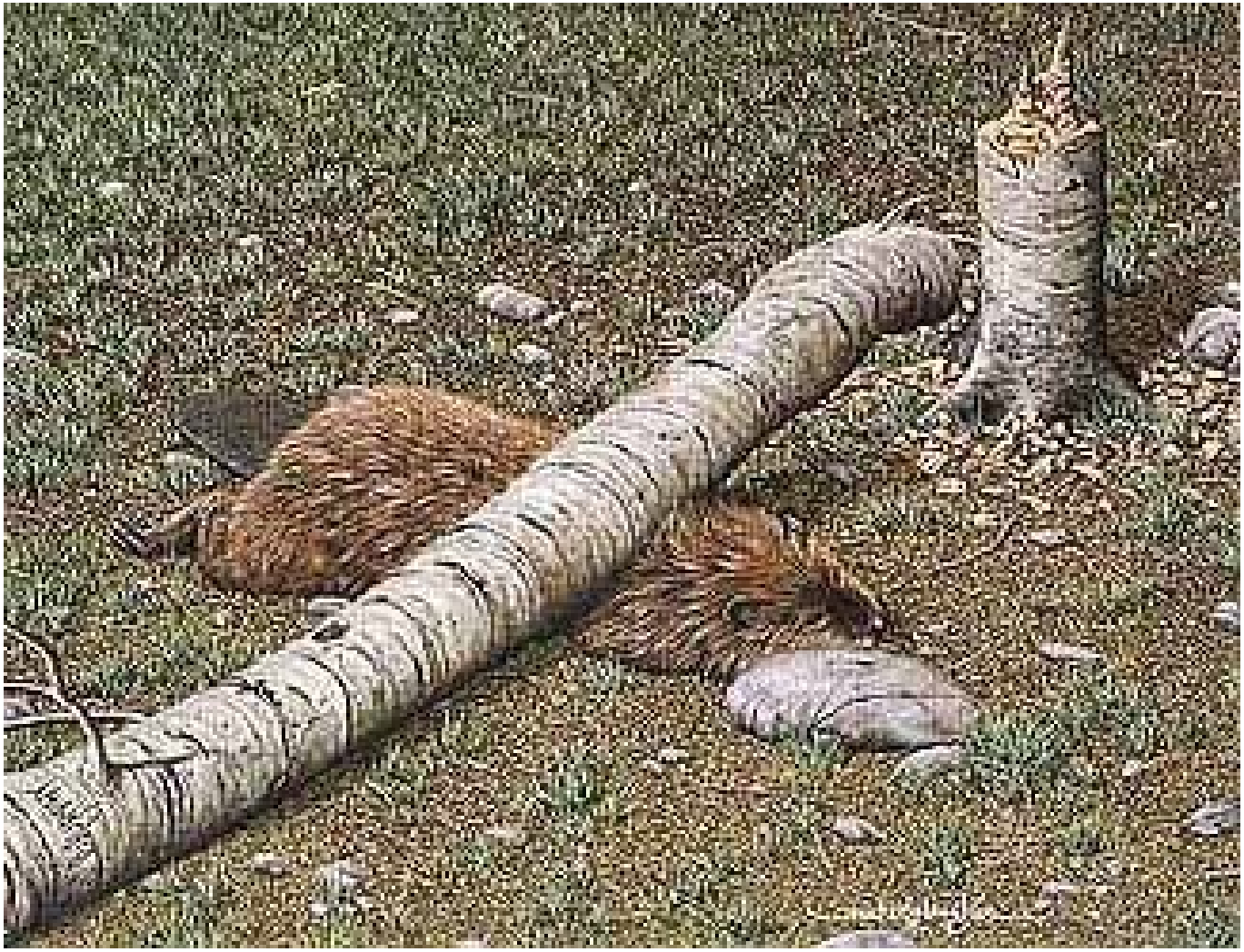
"Sizing up opponents to determine victory, assessing dangers and distances is the proper course of action for military leaders."

Sun Tzu, The Art of War, "Terrain"

- You've carefully thought out all the angles.
- You've done it a thousand times.
- It comes naturally to you.
- You know what you're doing, its what you've been trained to do your whole life.
- Nothing could possibly go wrong, right?

U.S. AIR FORCE

Think Again.



Why ORM?

To Ensure Necessary Risks are Taken

- **Important tool for safe training realism**
- **Potential to expand capabilities**
- **Assures necessary risk taking to enhance superiority**

"Take calculated risks. That is quite different from being rash."

General George S. Patton, Jr.

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USAF ORM VISION

Macro: **Every leader, airman, & employee manages risk in all they do… o*n- & off-duty***

Micro:

On-Duty **- Every organization manages normal operational risk profile**

- Unique operations identified & assessed

- Integrated element of operational planning & execution

Off-Duty **- Individuals apply risk management to activities**

U.S. AIR FORCE

4 KEY ORM PRINCIPLES

1. **Accept no unnecessary risks.**
2. **Make risk decisions at the appropriate level.**
3. **Accept risks when benefits outweigh costs.**
4. **Integrate ORM into planning and operations at all levels.**

THE ORM 6-STEP PROCESS

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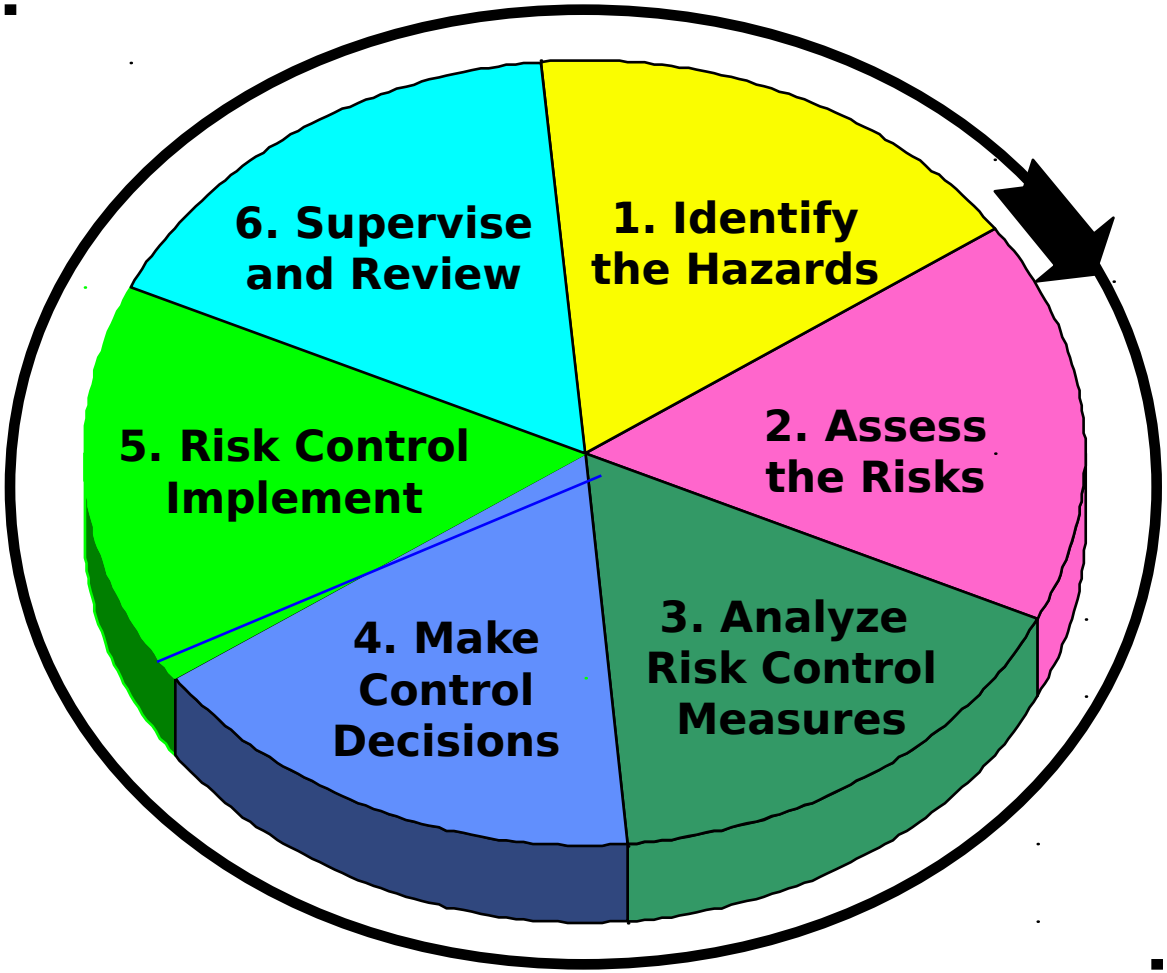
1. Identify the Hazards
2. Assess the Risks
3. Analyze Risk Control Measures
4. Make Control Decisions
5. Risk Control Implement
6. Supervise and Review

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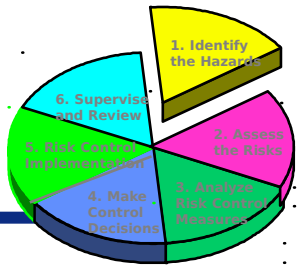
STEP 1 – IDENTIFY THE HAZARDS


1. Identify the Hazards
2. Assess the Risks
3. Analyze Risk Control Measures
4. Make Control Decisions
5. Risk Control Implementation
6. Supervise and Review

Process: Emphasize hazard ID tools. Adds rigor and early detection.

Output: Significant improvement in the detection of hazards (50%+) .

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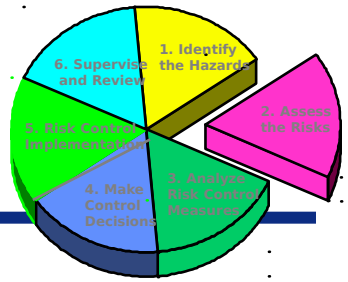
STEP 2 – ASSESS THE RISKS


1. Identify the Hazards
2. Assess the Risks
3. Analyze Risk Control Measures
4. Make Control Decisions
5. Risk Controls Implemented
6. Supervise and Review

Process: All hazards evaluated for mission or activity impact. Root causes determined and risk levels assigned.

Output: Personnel know the priority risk issues of the organization.

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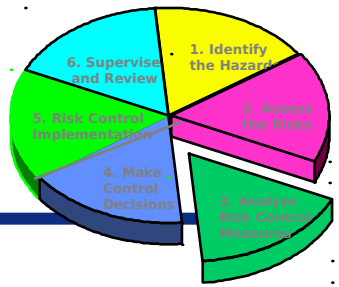
STEP 3 – ANALYZE RISK CONTROL MEASURES


1. Identify the Hazards
2. Assess the Risks
3. Analyze Risk Control Measures
4. Make Control Decisions
5. Risk Control Implementation
6. Supervise and Review

Process: Comprehensive risk control options developed on a worst-first basis.

Output: A full range of cost effective, mission supportive, risk controls for the decision-maker.

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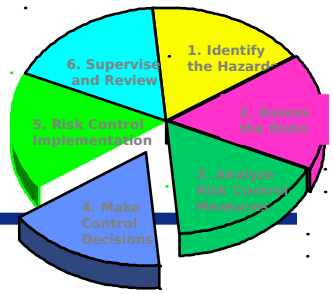
STEP 4 – MAKE CONTROL DECISIONS


6. Supervise and Review
1. Identify the Hazards
2. Assess the Risks
5. Risk Control Implementation
3. Analyze Risk Control Measures
4. Make Control Decisions

Process: Gets risk decisions to the right person, at the right time, with the right support.

Output: Personnel know their decision-making authority and limitations.

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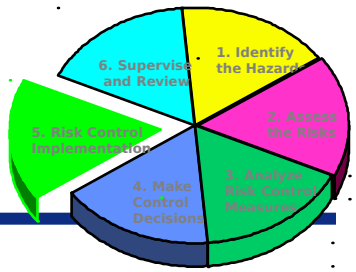
STEP 5 – RISK CONTROL IMPLEMENTATION


1. Identify the Hazards
2. Assess the Risks
3. Analyze Risk Control Measures
4. Make Control Decisions
5. Risk Control Implementation
6. Supervise and Review

Process: Leaders lead, operators involved, accountability known.

Output: Controls approved by decision-maker are implemented.

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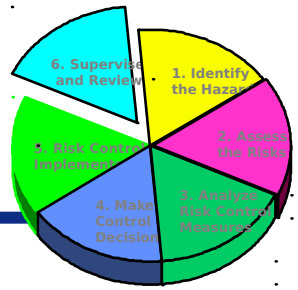
STEP 6 – SUPERVISE AND REVIEW


6. Supervise and Review
1. Identify the Hazards
2. Assess the Risks
3. Analyze Risk Control Measures
4. Make Control Decisions
5. Risk Control Implement

Process: Measures mission effectiveness and provides direct indicators of risk.

Output: Real time status. Proactive, <u>not</u> reactive.

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USING THE 6-STEP PROCESS

THE RISK MANAGEMENT CONTINUUM

PLANNING	OPERATIONS	AFTER-ACTION
-Deliberate ORM	-Change Analysis	-Assess Indicators
-Detailed Hazard ID	-Real Time	-Deliberate ORM
-Integrated	-Highly Decentralized	-Integration
		-Feedback to Planni

We try to get most ORM done here

But continue the process here and here

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USING THE 6-STEP PROCESS
LEVELS OF EFFORT

“TIME CRITICAL” **“DELIBERATE”** **“STRAT**

Little:
- Time
- Complexity
- Risk

Lot of:
- Time
- Complexit
- Risk

ORM is applied proportionate to operational complexity, criticality, and risk!

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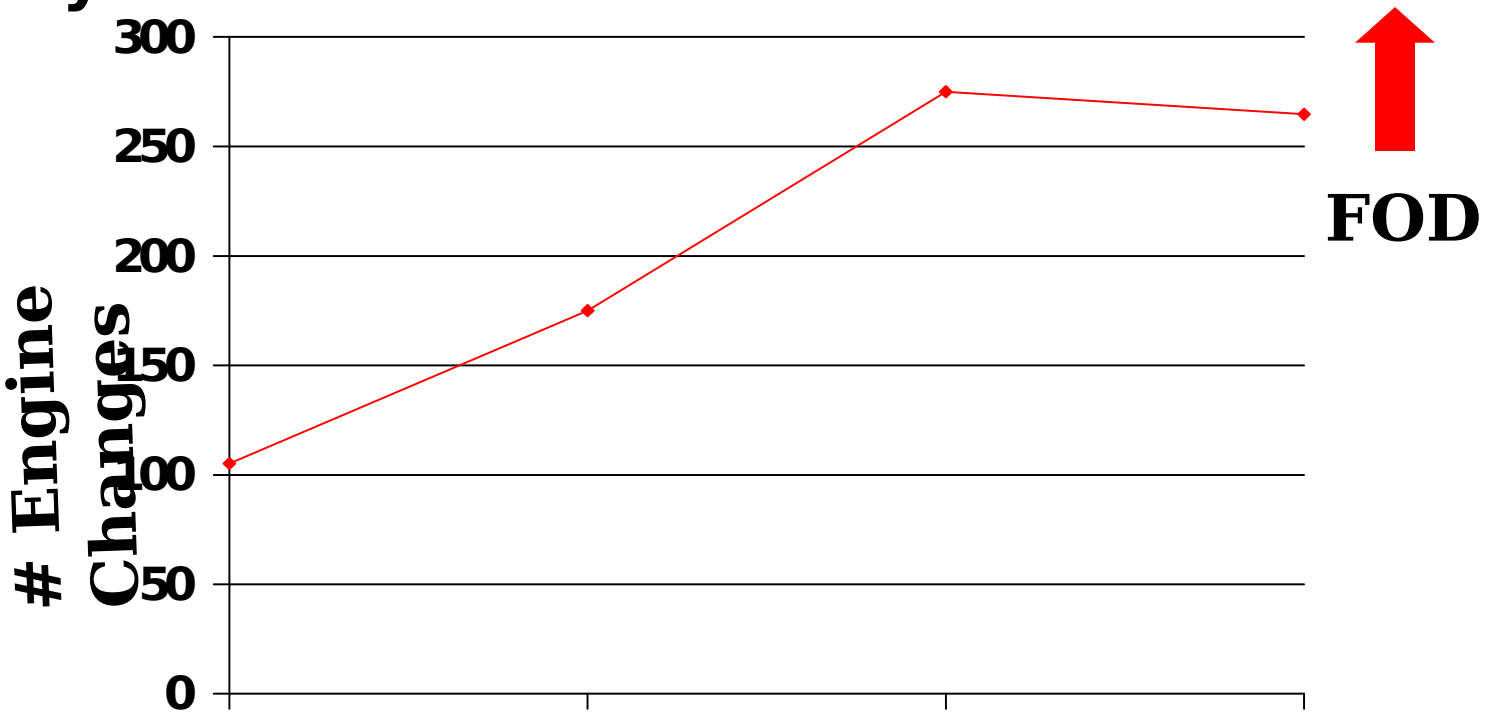
Operational Risk Ma Applied

- Target: F-15 engine swap-outs
- Why:



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Background

- **Cross-Functional effort**
  - Crew chiefs
  - QA
  - Engine troops
  - Sheet metal
  - Safety
- **Initial belief of team:**

"…weren't convinced we could improve a whole lot in this area…"

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How They Did It…

- **Evaluated data**
  - Mishap
  - Maintenance logs
- **Consulted T.O.'s**
- **Performed Operations Analysis**
  - Flow-charted steps
  - Observed operations
  - Identified best practices
- **Developed control options**
- **Obtained approval for changes**
- **Implemented changes**

U.S. AIR FORCE

How They Did It…

Some Examples

- **Safety:**
  - Pins #1 risk (FOD)

    Solution: Use foam cut-outs for pin accountability
  - Validated need for engine bay inspections
- **Resources (Time, Manpower, Tools, etc.)**
  - Numerous constraints identified
  - Solutions:
    - Use air-powered torque adjustable wrench for 216 fasteners
    - Development of engine change tool list
    - Forms streamlined

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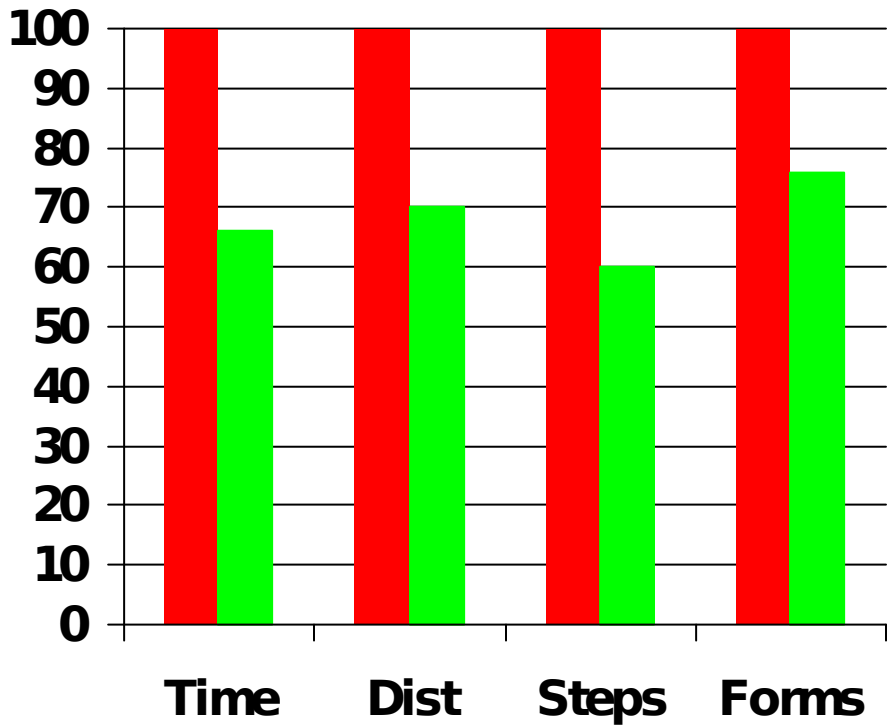
Outcome: "Better, Safer, Faster"

- **16 Hazards Assessed**
  - Significant FOD Reduction
- **Cut Time 33%**
  - 7 1/2 to 5 hours
- **Distance Traveled Cut 30%**
- **Cut Mx Steps by 40%**
- **Time Spent on Forms Cut 26%**



Headquarters U.S. Air Force

Integrity - Service - Excellence

Organizational Safety Assessments

Lt Col Tom Luna, MD, MPH

USAF Safety Center Surgeon

U.S. AIR FORCE

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Organizational Safety Assessments: OSAs

- What are they?
- Why do we do them?
- How do we do them?
- What we've found…
- Where we want to go…

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OSAs Defined

- Risk management tool
- Private
- By request
- Synthesis of subjective and objective data
- Feedback includes recommendations
- Requestor “owns” information

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OSA Objective Data

- Occupational Stress Inventory (OSI)
  - Stress, strain, coping
- Safety Center Survey
- Unit specific questions

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OSA Subjective Data

- Team visit includes aircraft, weapons systems, maintenance, and human factors experts
  - Structured interviews
- 6 Pillars
  - Unity, communication, justice, flexibility, support, learning

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OSAs: WHY

- **Organizational factors in mishaps!**
- **Difficult to prove as causal but we know it's present**
- **It's something leadership can change**
- **It makes a difference on a group versus individual scale**

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OSAs: HOW

- Wing CC requests; AF/SE approves
- Wing submits specific questions of concern
- AFSC/SEFL builds safety survey; sends both objective survey forms to wing

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OSAs: HOW

- Wing administers objective survey forms
  - Minimum 90% return rate from target population
  - Surveys returned to AFSC/SEFL
- AFSC performs data entry and analysis
- OSA Team visits wing
  - Subjective data collection via structured interviews

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OSAs: HOW

- OSA Team outbriefs Wing CC and AF/SE
- Deliverables to requestor:
  - Data via Excel spreadsheets
  - Outbrief via PowerPoint disk and hard copy
  - Executive Summary Report
  - All documents labeled “FOUO”

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OSAs: HOW

- **Significant potential threats to safety identified?**
  - **AF/SE discusses with requestor or higher authorities as necessary**
- **Decision to release results rests with requestor and AF/SE (under restrictions of FOIA, exemption 5)**

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OSAs: TIMING

- Capacity: one per quarter
- Approximately 3 months, start to finish
- For unbiased report, won't schedule
  - Following catastrophic events (e.g., Class A mishap, suicide)
  - During major events (e.g., inspection, airshow)
  - During, immediately before or after deployment

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OSAs: WHAT

- Over 16,000 responses to date
- AF trends:
  - Near OSI norms with some exceptions
  - 6 Pillars (interview data) and Safety Surveys show the real differences
- Communication and leadership count most!

Occupational Stress Inventory (OSI)

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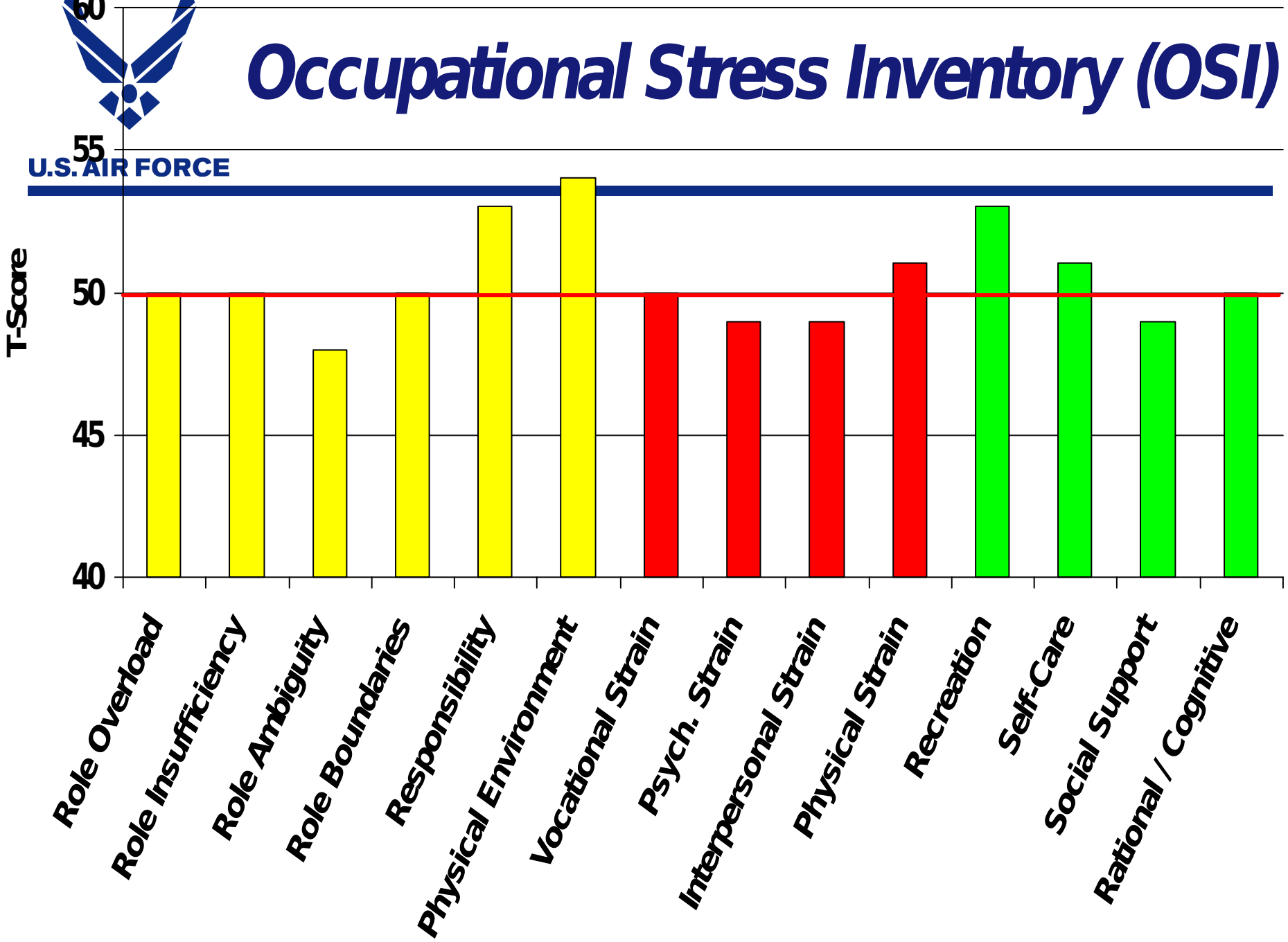
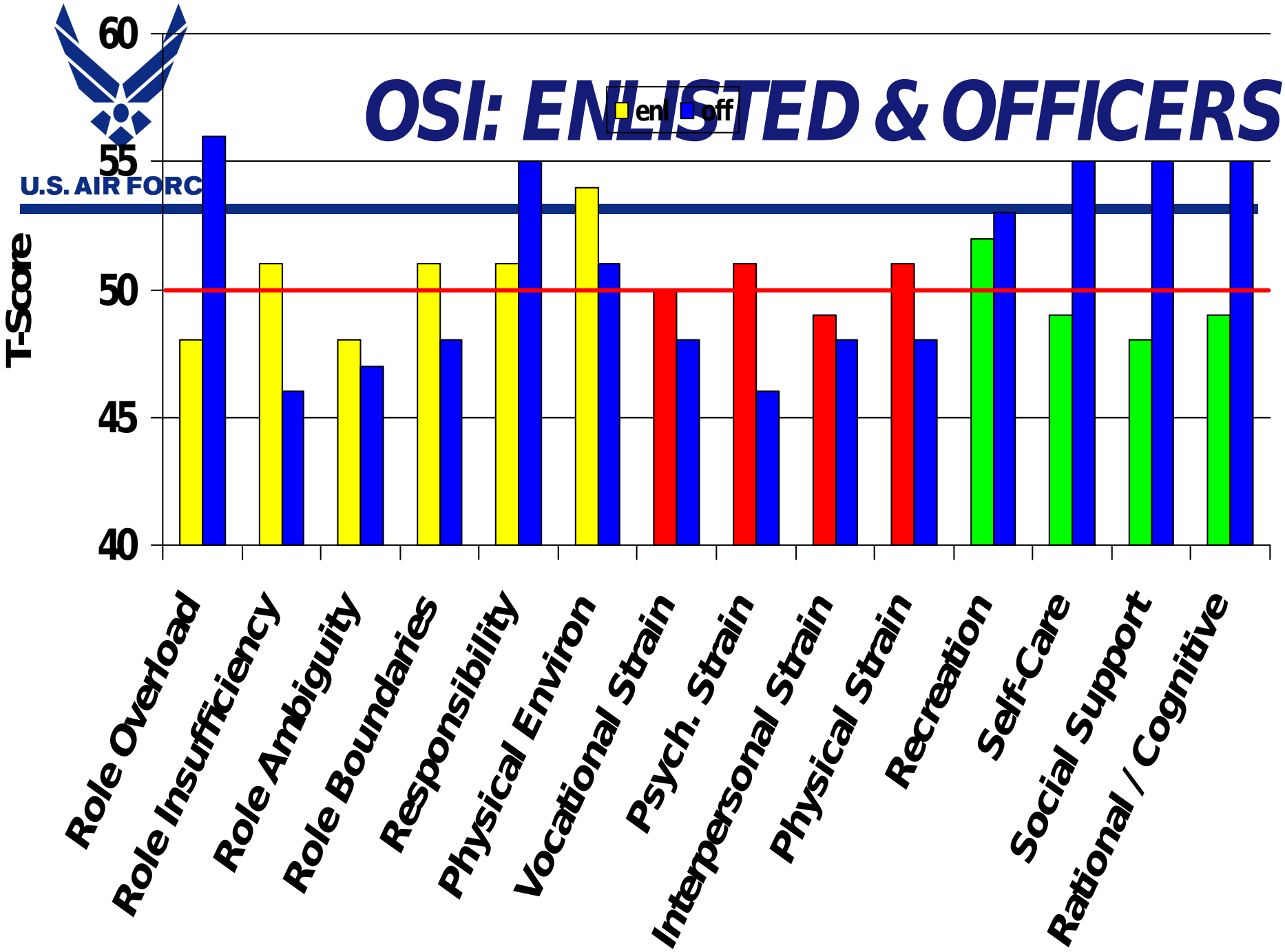


OSI: ENLISTED & OFFICERS



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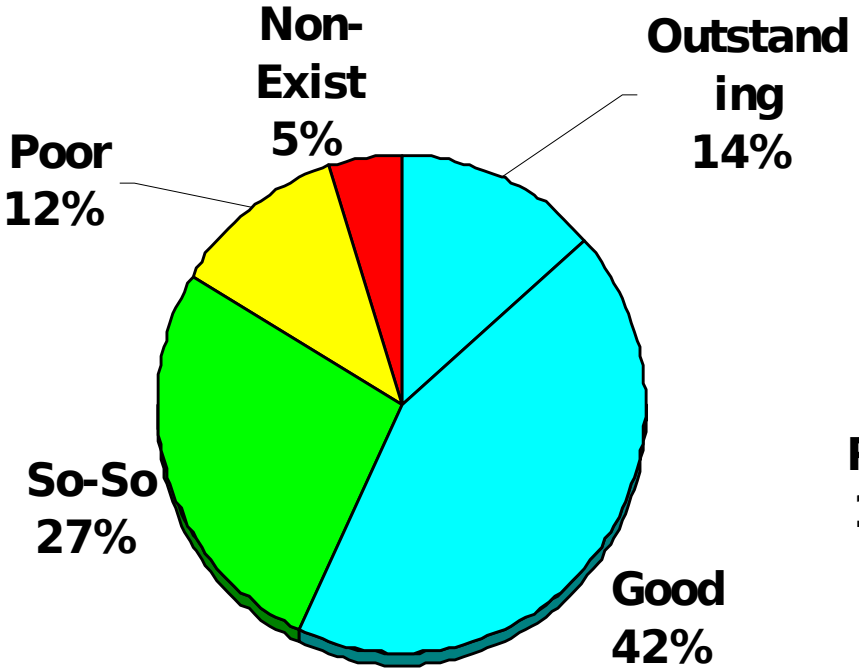
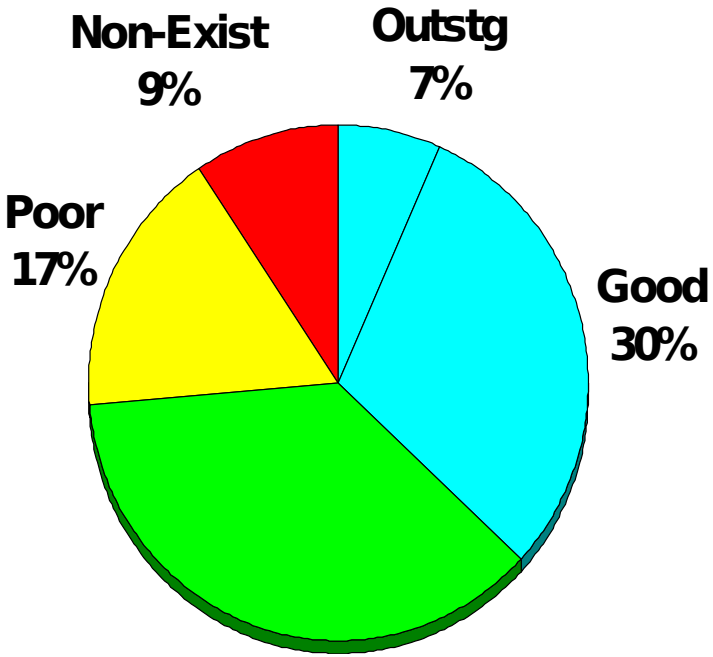
Safety Survey:"Morale" Base X vs. Base Y





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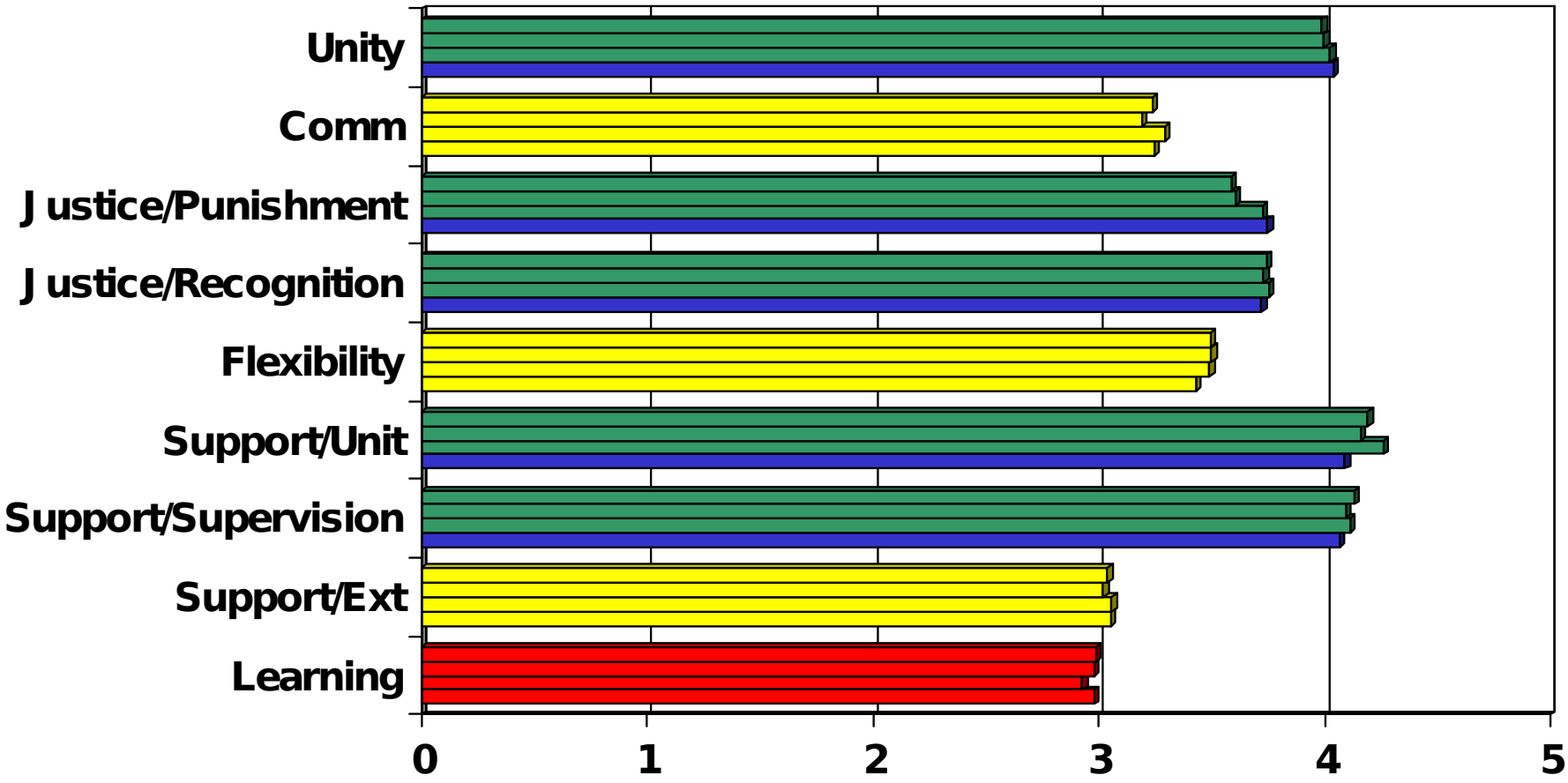
6 PILLARS: Base X



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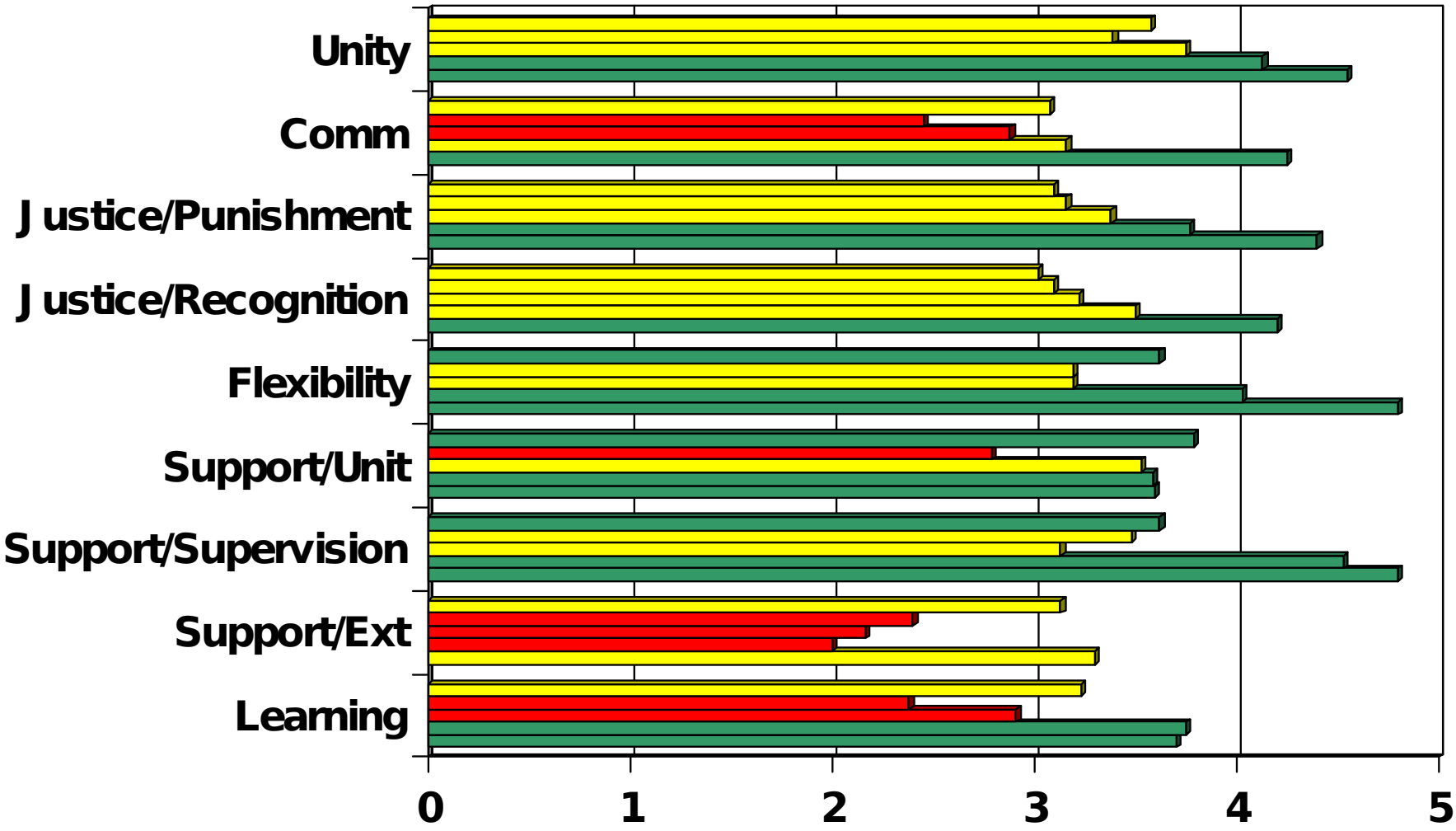
6 PILLARS: Base Y



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OSAs: Future Directions

- Shorten the time line
- MAJCOM augmentation
- Follow up comparisons
- Other military comparisons

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QUESTIONS?

- **POC: Maj Tracy Dillinger (OSA Team Chief; Chief, Air Force Aviation Psychology)**
  - **HQ AFSC/SEFL**
  - **Kirtland ABF, NM 87117**
  - **OSA@kafb.saia.af.mil**
  - **(505) 846-0871; DSN 246-0871**

U.S. AIR FORCE

What Are Human Factors Councils?

- Periodic meeting of unit leadership
- Systematic review of each active flyer profess
- Looking at:
  - Training issues
  - Discipline issues
  - Medical issues
  - Personal stressors

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Who Makes Up the HFC?

- Commander
- Ops Officer
- Training Officer
- Safety Officer
- Flight Commander
- Flight Surgeon
- Anyone else the commander wants

Potential Outcomes

- At the discretion of the commander
- Not designed to be punitive
- Range of options
  - Further evaluation
  - Individual counseling
  - Specific training plans
  - Increased supervision
  - Short-term DNIF

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What Are We Looking For?

- Aviators at increased risk
- Use ORM techniques to reduce risk
- Categories of “Undressed” aviator
  - Below average newcomer
  - Overconfident senior aviator
  - “Hot stick”
  - Poor performer
  - Overstressed aviator

The Flight Surgeon & the Base Flight Safety Program

DEVELOPING A SAFETY CULTURE

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The Safety Culture

Interaction with Clinic/Hospital

- The ultimate Family Practitioner taking care of healthy population
- Preventive Medicine Specialist
- Occupational Medicine Specialist
- Accident Response Specialist
- May be seen as having it “easy”
- Overcome stereotype by:
  - Briefings, videos etc
  - Tours and flights for medical staff
- Last resort: Line CC intervention with MTF CC

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The Safety Culture

Interaction With the Squadron

- You're their "DOC"
- You're an aircrew member – ***not a passenger!!!***
- You're an advisor to the Commander
  - Attend their staff meetings & speak up
- You are the preacher of health and safety
  - Attend & brief at CC calls
- May be seen as a threat by flyers

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The Safety Culture
Interaction With the Squadron

- Overcome the stereotype by:
  - Spending as much time as possible at Squadron
    - Only half your day should be spent seeing patients
  - Flying; being a part of the mission – all missions
  - Going TDY
  - Getting involved socially
  - Play small town doc
    - Get to know their families and take care of them
  - Flightline clinic – especially “Return to Status” clinic

Bottom line:
Know the Mission; Know the Equipment; Know the

U.S. AIR FORCE

USAF FS: 50% of Time - NonClinical

"All FSs will be expected to maintain a balance of direct patient care (clinic-based) and non-patient care activities such as ht safety, environmental and public health, human performance enhancement a occupational health. Staffing and resourcing models, metrics etc. are built on the assumption that half of a FSs time is spent on direct patient care.
All FSs are expected to be in direct interface with operational organizations in the activities above during their non-clinical periods."

Brig Gen Murray (AFMOA/CC)
25 Apr 01; *Primary Care Optimization (PCO) in Flight Medicine (FSO) & Physical Examination and Standards Section (PES)*
Paragraph 1.b. under "Flight Medicine Group Practice"
[emphasis added]

The Safety Culture

- **DO NOT FORGET ABOUT THE OTHER "OPERATORS"**
  - **ATC**
  - **Maintainers**
  - **Life Support**
  - **POL**
  - **Security Police**

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The Safety Culture

Interaction with Base Safety

- **Be Proactive**
  - **Get to know Wing/Squadron Flight Safety Officer**
  - **Periodically read new mishaps**
    - **Look for Safety Center Newsletter**
  - **Get on Monthly Flight Safety Meeting Agenda**
  - **Consider Safety Working Group at your base to discuss human factor issues**
    - **Flight Med**
    - **Flight Safety**
    - **Physiologist**
    - **Life Support**

The Safety Culture
Nearby Help

- RAM
- Senior 4F0x (aerospace medicine NCO)
- Human Performance Team (HPT)
  - Aerospace Physiologist and Technician trained in HF issues
    - Heavy Operational HF orientation
    - Human Factors Consultant/Instructor
    - HF Consultant to Class A/B/C, HAP, “Incidents”
    - IRC, Safety Meetings
    - Fire, Security, ATC Personnel
  - Aviation Psychology Consultant
    - Clinical: Flying Dispositions
    - Consultant/Instructor
    - Class A/B/C HF consultant
    - Organization Assessments: Survey development

Are You Developing a Culture of Safety?

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Questions?